CLINICAL EFFECTIVENESS & EVALUATION UNIT

Royal College of Physicians
Setting higher medical standards

National Comparative Audit of Blood Transfusion

NHS Blood and Transplant

National Comparative Audit of Overnight Red Blood Cell Transfusion

January 2008

St. Elsewhere's Hospital

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How to use this report

This report can be useful in assisting you to evaluate the quality of red blood cell transfusions which occur in your hospital during the time period 20:00 to 08:00.

The premise of the audit is that transfusion at night is inherently unsafe, based on a SHOT recommendation (SHOT 2005) that transfusions out of core hours should be avoided unless clinically essential. The audit, though, recognises that some transfusions overnight are essential and some transfusions occur for reasons that may not be deemed clinically essential, but are nonetheless acceptable always provided that patient safety is paramount.

For the purposes of this audit, the reasons for transfusion overnight are sub-divided into 4 groups

Group 1 – Acute clinical need

- Patients with active bleeding / haemolysis at the time of transfusion
- Patients with low haemoglobin and symptoms

Group 2 – Less acute clinical need

- Patients transfused while in theatre
- Patients transfused to raise their haemoglobin prior to surgery the following day
- Patients transfused to raise their haemoglobin prior to a procedure the following day

Group 3 – Pragmatic need

- Patients transfused so they can be discharged same/next day
- Oncology/Haematology patients with limited line time
- Patients transfused out of hours because they are finishing off a transfusion episode

Group 4 – Other

- Patients transfused for reasons that do not fall into the above categories

Table 5 shows you how your out-of-hours transfusions were sub divided. You should use these data to consider developing your own policy for which out-of-hours transfusions are appropriate and which are not.

We suggest that there is an increased risk of a transfusion complication not being detected when a patient is transfused overnight because there may be fewer nurses to monitor the patient and there is likely to be fewer medical and laboratory staff available to respond to the complication. Monitoring the patient at night may be more difficult than in the day time because of reduced lighting. Evidence that the patient is being monitored is gathered from the record made of vital signs observations. British Committee for Standards in Haematology guidelines (BCSH 1999) state that the best way to monitor a patient is by visual examination. Auditable evidence for this is that the pulse, temperature or blood pressure was monitored and recorded, because it is the only written evidence we have that someone attended upon the patient once the transfusion had started. Tables 6 & 7 shows where such monitoring was carried out, both in terms of location and patients classified into groups 1 to 4. You could use these tables to identify clinical areas where patients may be at risk because they are not being monitored during transfusion, and to develop strategies to minimise this risk.

We present a best case and a worse case scenario in order to help you judge the extent of risk, and results are shown on page 14. The statistics presented in Sections 2, 3 and 4 help construct a picture of transfusion practice and can guide what action to take next.

Executive summary

The premise of the audit is that transfusion at night is inherently unsafe, based on a SHOT recommendation (SHOT 2005) that transfusions out of core hours should be avoided unless clinically essential. The audit, though, recognises that in practice transfusion out of hours does occur for reasons that may not be deemed clinically essential, but are nonetheless valid always provided that patient safety is paramount.

Only 58% of patients transfused had clinical indications for the transfusion to occur out of hours (Group1). An additional 1.4% had an understandable, but less acute, clinical reason (Group 2). A further 9% did not have a clinical reason for the transfusion to occur overnight, but a pragmatic (operational) reason (Group 3). The overnight transfusion would enable the patient to progress more quickly with their treatment than if it was delayed until the following day. For 32% of patients (Group 4) there was no clinical or pragmatic reason for the transfusion to occur overnight.

Only 1186 (55%) of patients had observations documented within 15 minutes of the start of the unit. High dependency clinical areas, such as theatres, recovery, ITU and A&E had a higher percentage of observations undertaken at 15 minutes compared to ward location. However, assessment areas had only slightly higher observations (56%) at 15 minutes than ward location (53%). Ward locations often have less clinical staff than high dependency areas and the observations seem to reflect the increase risk this has on a patient being transfused in this area.

80% of patients had reason for the transfusion recorded in the medical notes.

Having an acute clinical need and observations within 15 minutes are the most important of the criteria to be met to minimise the patient's risk of a transfusion. It is essential that hospitals work towards achieving these two criteria.

There is no time period overnight when transfusion does not take place, so reasons for transfusions need to be examined whatever the time of transfusion.

Recommendation 1
Patients without a clinical need should not be transfused overnight.

Recommendation 2
Hospitals may wish to review the practice for patients in Group 3 to ensure that the pragmatic reason for transfusion is justified.

Recommendation 3
Hospitals should review the practice for patients in Group 4, since there appears to be neither a clinical nor a pragmatic reason for transfusing them overnight.

Recommendation 4
Hospitals should include guidelines for transfusion overnight in their transfusion policy.

Recommendation 5
For all overnight transfusions, clinical staff should, within 15 minutes of the start of each unit, take and record observations in the clinical notes.

Recommendation 6
Overnight transfusions should only be started if observations can be undertaken within 15 minutes of the start time.

Recommendation 7
The reason for transfusion, beneficial effects and adverse incidents must be documented in the patients' clinical notes.

Introduction

Why is this audit necessary?
The Serious Hazards of Transfusion (SHOT) report has highlighted the increased risk of overnight transfusion and found that 37% of errors in which the time was reported took place between 20:00 and 08:00. In its 2005 report, SHOT recommended avoiding blood transfusion out of core hours. (SHOT 2005, recommendation 4). We suggest that there is an increased risk of a transfusion complication not being detected when a patient is transfused overnight because there may be fewer nurses to monitor the patient and there is likely to be fewer medical and laboratory staff available to respond to the complication. Monitoring the patient at night may be more difficult than in the day time because of reduced lighting

What are the aims of this audit?

- Establish the percentage of red cell units administered between the hours of 20:00 and 08:00 hours nationally.

- Look in detail at 14 overnight red cell transfusions per hospital to see if the reason for the transfusion was appropriate according to pre-defined criteria, and whether it was monitored according to BCSH guidelines.

- Following this audit report, produce audit tools which hospitals can use to identify *reasons* why overnight transfusions are given inappropriately.

- A reduction in the number of red cells transfusions which are performed between the hours of 20:00 and 08:00 unless they are clinically or pragmatically indicated.

- Use the data from this report to compare the quality of patient monitoring in patients transfused overnight during the 2008 re-audit of bedside transfusion practice.

Who are the principal stakeholders?
NHS Trusts
Independent hospitals
NHS Blood & Transplant
National Patient Safety Agency
Medical Royal colleges
Royal College of Nursing

Method

Selection of NHS Trusts and independent hospitals

All NHS Trusts in England were invited to participate in the audit, as were all independent hospitals. Hospital was the unit of involvement, since practice may vary from hospital to hospital within a Trust.

Trusts and hospitals in Wales, Northern Ireland and Scotland were invited to participate via our nominated contacts within the blood services in those countries.

A letter, explaining the reason for the audit, the purpose of the audit, the proposed timescale, and the proposed dataset to be collected, was sent from the Clinical Audit Leads to the Chief Nurse and Clinical Audit Manager in each English NHS Trust. An electronic copy of this letter was sent via email to Chairs of Hospital Transfusion Committees, Trust Transfusion Laboratory Managers, Transfusion Practitioners, and Consultant Haematologists with responsibility for blood transfusion. For independent hospitals a letter was sent to the hospital manager.

Nature and size of the case sample for this audit

The audit was in two parts.

For the purposes of this audit, overnight transfusion is defined as those transfusions taking place between 20:00 and 08:00 the following day. The time a unit of blood was collected for transfusion was used as a proxy for transfusion start time, as this information is easier for hospitals to collect. To enable delivery and checking processes to occur, units were included in the audit if they were collected between the hours of 19:30 and 07:30 the following day. Some hospitals provided transfusion start time in lieu of the collection time.

In the first part hospitals were asked to identify all units of red cells collected for transfusion in the period starting 07:31 Monday 24th September 2007 to 07:30 Monday 1st October 2007.

In the second part hospitals were asked to audit 14 patients who had been transfused overnight. Hospitals selected their own cases for this audit based on a quota suggested by the project team to reflect the specialities involved.

Table 1 - Participation rates

Hospitals	Hospitals Invited	Part1: Hospitals stating how many units of blood were collected at all times	Part1: Hospitals stating how many units of blood were collected overnight	Part 2 Hospitals participating in audit of selected cases
English NHS	178	151	169	156
English Independent	30	14	14	6
Welsh NHS	16	12	16	15
Scottish NHS	5	5	5	4
TOTAL	**229**	**182**	**204**	**181**
YOUR SITE		YES	YES	YES

181 hospitals submitted data to the clinical audit, median 13, Inter-quartile range 9-14, range 1-29, total 2138 cases.

Your hospital contributed 19 clinical audit cases

The data collection method

Data entry was directly onto the audit tool webpage designed for the purpose (see appendix for items included). Some data cleaning was necessary, particularly to do with date sequences, to ensure that all cases audited fell into the audit timeframe.

Pilot

The piloting of the audit took place at the Royal Berkshire Hospital and Hope Hospital. Project Group members visited these hospitals and "walked through" the process of obtaining information for the audit, noting as they went the need to revise questions for the sake of clarity and creating guidance notes for hospital auditors to use. Following these visits the audit tools were revised so that only information which could be collected was asked for, and appropriate methods of collecting information had been established as effective.

The web tool was piloted by those hospitals shown in the acknowledgements section of this report. Their task was to operate the web page to test the functionality as well as to evaluate the help notes provided. No significant changes were required following the technical pilot.

Presentation of results

Individual hospital results are shown alongside the national results, to facilitate benchmarking. Some of the 'Your site' results are based on small numbers of patients and hospitals need to take account of this when interpreting their own results.

Standards and Criteria

Standards and criteria were created by the Project Group and are based on published guidelines or papers where possible. Each standard is accompanied by a rationale statement which is referenced. References are shown at the end of this report. Where published evidence is unavailable, standards and criteria are based on the Project Group's consensus on best practice. There are 3 standards used:

STANDARD 1

Patients are not transfused overnight unless clinically indicated or for practical, pragmatic reasons. (These reasons are defined on page 4 of this report).

STANDARD 2

Patients transfused overnight are monitored in accordance with BCSH guidelines.

STANDARD 3

The reason for administration of red cell transfusion is documented in the patients' medical records (BCSH 1999).

The rationale behind these standards and the risk associated with non-compliance is described in the relevant pages of this report.

Section 1 - PRINCIPAL FINDINGS

Part one of the audit identified the number and percentage of the red cell units collected overnight compared to all units collected during the one week period. It identified the clinical speciality and collection time for each unit collected overnight.

Table 2 - % of red cells transfused overnight

	National		Your site	
	%	N	%	N
Collected all times		25630		405
Collected 19:30 to 07:30*	29	7376	33	132

The national results in this table is restricted to 182 hospitals that submitted data on both the total transfusions collected and the numbers collected overnight. .

The inter-quartile range for hospital variation in the % of red cells transfused overnight was from 24% to 38%,.

Table 3 - Red cells collected for overnight transfusion by speciality

	National (4949)		Your site (132)	
Clinical Speciality	%	N	%	N
A&E	8	388	2	3
Elderly care	2	109	1	1
Gynaecology	2	120	0	0
Haematology	7	340	14	19
ITU	11	543	11	14
Maternity	4	188	3	4
Medicine	23	1131	11	15
Oncology	3	159	5	7
Orthopaedic	7	359	1	1
Paediatric	1	71	5	6
Surgery	19	961	18	24
Other	12	580	29	38

The breakdown of specialty for overnight transfusion was known for 126 hospitals – some 44 hospitals only gave a breakdown of all their transfusions. Hospitals are shown the data they submitted. The national results in this table shows the distribution by speciality for 4949/5049 overnight transfusions.

Table 4 - Red cells collected for overnight transfusion by 2 hour time range

Time range	National (6104)		Your site (132)	
	%	N	%	N
19:31-21:30	26	156	24	32
21:31-23:30	21	1297	22	29
23:31-01:30	18	1071	17	22
01:31-03:30	12	760	11	15
03:31-05:30	10	623	14	18
05:31-07:30	13	790	12	16

This table shows the time distribution for 6104 overnight transfusions, times otherwise unknown

Table 4 suggests that there is no time period overnight when transfusion does not take place, so reasons for transfusions need to be examined whatever the time of transfusion.

The second part of the audit looked at patients transfused in the overnight period in more detail. The number of patients audited in this section was 2138, which represents 30% (2138/7206) of all units collected for overnight transfusion for the 181 hospitals submitting data to the clinical audit.

This audit classifies the reasons for transfusion overnight into 4 groups:

Group 1 – Acute clinical need

- Patients with active bleeding / haemolysis at the time of transfusion
- Patients with low haemoglobin and symptoms

Group 2 – Less acute clinical need

- Patients transfused while in theatre
- Patients transfused to raise their haemoglobin prior to surgery the following day
- Patients transfused to raise their haemoglobin prior to a procedure the following day

Group 3 – Pragmatic need

- Patients transfused so they can be discharged same/next day
- Oncology/Haematology patients with a limited line time
- Patients transfused out of hours because they are finishing off a transfusion episode

Group 4 – Other

- Patients transfused for reasons that do not fall into the above categories

Box 1 – Categories of reasons for overnight transfusion used in the audit

STANDARD 1

Patients are not transfused overnight unless clinically indicated or for practical, pragmatic reasons. (These reasons are defined in Box 1 above).

Rationale

In its 2005 report, SHOT recommendation 4 advises avoiding blood transfusions outside of core hours. It states that “available data indicate that blood administration and pre-transfusion testing outside of core hours are less safe and should be avoided unless clinically essential.” (SHOT, 2005). The audit, though, recognises that in practice transfusion out of hours does occur for reasons that may not be deemed clinically essential, but are nonetheless appropriate always provided that patient safety is paramount.

Risk

We suggest that a patient is at increased risk when being transfused overnight because there are likely to be fewer medical and laboratory staff available should a problem occur, and there may be fewer nurses to monitor the patient. Monitoring the patient at night may be more difficult than in the day time because of reduced lighting. However, if there is an acute clinical need for transfusion, then that risk may be more acceptable than in cases where the need is not so acute.

We acknowledge that our definition of what is clinically appropriate is simplistic and is one of the limitations of the audit. We do not in this report wish to suggest that those transfusions which fall into Groups 1 & 2 are *automatically* appropriate, nor that those in the other groups are automatically inappropriate. What we do suggest is that always provided the patient is monitored to ensure optimum patient safety, it is unlikely that a hospital would wish to stop transfusions overnight for patients falling into Groups 1 & 2.

Table 5 - Reason for transfusion overnight

	National (2138)		Your Site (19)	
	%	N	%	N
Acute clinical need (Group 1)	**58**	**1237**	**26**	**5**
Active bleeding / haemolysis	25	544		1
Low Hb with symptoms	32	693		4
Less acute clinical need (Group 2)	**1.4**	**29**	**0**	**0**
In theatre	0.2	5		0
To raise Hb pre-operatively	0.7	16		0
To raise Hb pre-procedure	0.4	8		0
Pragmatic (Group 3)	**9**	**196**	**11**	**2**
For discharge same / next day	2	45		2
Limited line time (oncology/Haematology	2	51		0
Finishing a transfusion episode*	4.7	100		0
Other (Group 4)	**32**	**676**	**63**	**12**

Group 4 includes 32 'blanks', 509 'Not known' and 135 other** reasons

*94 of these were originally classed as 'Not known' or 'other' but re-classed as 'finishing a transfusion episode' because there was only one unit commenced overnight, it was the last one (either 2 of 2, 3 of 3, 4 of 4 or 5 of 5) and the start time was between 20:00 and 21:00.

**The other reasons included Post surgery (36), Anaemia / low Hb (29), At medical request (5), Awaiting special blood (4), Difficulties with IV access (4), Overnight dialysis (4), and GI bleeds (but not active) (8). One hospital stated that the blood expired at midnight, and another stated the transfusion was given overnight to suit nursing staff.

Discussion

Only 58% of patients transfused had clinical indications for the transfusion to occur out of hours (Group1). An additional 1.4% had an understandable, but less acute, clinical reason (Group 2). A further 9% did not have a clinical reason for the transfusion to occur overnight, but a pragmatic (operational) reason (Group 3). The overnight transfusion would enable the patient to progress more quickly with their treatment than if it was delayed until the following day. For 32% of patients (Group 4) there was no clinical or pragmatic reason for the transfusion to occur overnight.

It is not within the scope of this report to establish why these transfusions did occur overnight but it is likely to be for one of the following 4 reasons:-

- A delay in the prescription of/request for the transfusion by medical staff
- A delay in the units being crossmatched by transfusion laboratory
- A delay in the units being collected by portering or clinical staff
- A delay in the administration of the transfusion by clinical staff

If unnecessary overnight transfusion episodes are reviewed in detail, it may be possible to identify some operational issues within the transfusion process that explains why these transfusions are not occurring during the day. An audit tool will be produced by the National Comparative Audit team to enable this work to be undertaken by hospitals.

Recommendation 1

Patients without a clinical need should not be transfused overnight.

Recommendation 2

Hospitals may wish to review the practice for patients in Group 3 to ensure that the pragmatic reason for transfusion is justified.

Recommendation 3
Hospitals should review the practice for patients in Group 4, since there appears to be neither a clinical nor a pragmatic reason for transfusing them overnight.

Recommendation 4
Hospitals should include guidelines for transfusion overnight in their transfusion policy.

STANDARD 2

Patients transfused overnight are monitored in accordance with BCSH guidelines.

Rationale
BCSH advises that visual observation of the patient is often the best way of assessing patients during transfusion (BCSH 1999). Therefore transfusions should only be given in clinical areas where patients can readily be observed by members of the clinical staff. It can be argued that with reduced night time illumination, visual observation of patients is hampered.

In a retrospective clinical audit it is impossible to tell if a nurse has observed a patient. BCSH guidelines require that pulse and temperature are measured 15 minutes after the start of each unit to detect any adverse reaction. To this we add Blood Pressure measurement, because if any of these is recorded at 15 minutes after the transfusion start time, it can be taken as proxy evidence that the patient is being monitored.

Risk
It is known that transfusion reactions can occur quickly and that if a patient does not have observations undertaken within 15 minutes of the start of the unit an adverse reaction to the transfusion could go undetected. If there is no documentation of the observation in the patient's clinical notes it is reasonable to argue that the patient was not observed at that time and was therefore at risk.

Table 6 – Observations within 15 minutes of transfusion start time – by location

		Observation within 15 mins			
	Total patients	National		Your Site	
Location:	**in location**	**%**	**N**	**%**	**N**
Ward	1456	53	769	38	5/13
HDU/ICU	308	63	193	80	4/5
Recovery	25	60	15		/0
Theatre	82	71	58	100	1/1
Admission / acute	176	56	99		/0
A & E	88	59	52		/0
Not stated	3	0	0		/0
TOTAL	**2138**	**55**	**1186**		**10/19**

Discussion
Only 1186 (55%) of patients had observations documented within 15 minutes of the start of the unit. High dependency clinical areas, such as theatres, recovery, ITU and A&E had a higher percentage of observations undertaken at 15 minutes compared to ward location. However, assessment areas had only slightly higher observations (56%) at 15 minutes than ward location (53%). Ward locations often have less clinical staff than high dependency areas and the observations seem to reflect the increase risk this has on a patient being transfused in this area.

Table 7- Observations within 15 minutes of transfusion start time – by Group

		Observation within 15 mins			
	Total patients	**National**		**Your Site**	
		%	N	%	N
Acute clinical need (Group 1)	1237	61	751	**60**	**3/5**
Active bleeding /haemolysis	544	65	352	100	1/1
Low Hb with symptoms	693	58	399	50	2/4
Less acute clinical need (Group 2)	29	41	12		**/0**
Pragmatic (Group 3)	196	51	99	**50**	**1/2**
Other (Group 4)	676	48	324	**50**	**6/12**

Patients with acute clinical need (Group 1) had 61% of observations undertaken within 15 minutes compared to patients with less acute clinical need (Group 2) who only had 41% of observations undertaken within 15 minutes. 65% of patients transfused for active bleeding had observations undertaken within 15 minutes compared to patient with low haemoglobin with symptoms (58%). This may be related to the clinical location of the active bleeding patient. They are likely to be in high dependency clinical areas where clinical staffing numbers are higher. Patients transfused for pragmatic reasons (Group 3) had 51% having observations undertaken at 15 minutes, compared to 48% of patients having a transfusion for other reasons (Group 4).

In 11% of all cases there was no record of any observations being done. These are included in the denominators for computing the percentages in the above table.

This data strongly supports the view that transfusions overnight are less safe.

Recommendation 5
For all overnight transfusions, clinical staff should, within 15 minutes of the start of each unit, take and record observations in the clinical notes.

Recommendation 6
Overnight transfusions should only be started if observations can be undertaken within 15 minutes of the start time.

STANDARD STATEMENT 3
The reason for administration of red cell transfusion is documented in the patients' medical records.

Rationale
BCSH guidelines advise that an entry is made in the case notes, describing the indication for the use of blood … the date, the number and type used, whether or not it achieved the desired effect and the occurrence and management of adverse incidents (BCSH 1999). This is important detail to have in case notes when auditing overnight transfusion, since it allows the auditor to understand clearly the reason why blood is needed for transfusion *overnight.* Similarly, if the risks to the patient from overnight transfusion are accepted, then it is important to have evidence that the desired effect of transfusion was achieved so that the benefit can be demonstrated and that the risk was outweighed by that benefit.

Risk
Transfusions have risks associated with them, therefore like any treatment, should only be administered if the benefits out weigh the risks. If a patient does have an adverse reaction to a

transfusion, the reason for the transfusion initially should be known. Without documentation, a hospital cannot demonstrate it considered the risks of transfusion.

The question asked in the audit relates to whether the reason for transfusion was stated in the notes, and not specifically about the reason for having the transfusion overnight.

Table 8 – Reason for transfusion stated in the notes

	National (2138)		Your Site (19)	
	%	N	%	N
Yes	80	1709	63	12
No	19	399	37	7
Not stated	1	30	0	0

Discussion
80% of patients had reason for the transfusion recorded in the medical notes.

Recommendation 7
The reason for transfusion, beneficial effects and adverse incidents must be documented in the patients' clinical notes.

Assessing the extent and degree of risk related to overnight transfusion
The audit data so far suggests that many patients are being transfused for good clinical reason, and many are being monitored during their transfusion to assure their safety and wellbeing. To further help classify the risk, we have created 2 scenarios which may be useful in guiding hospitals in what action to take next.

Best Case scenario
There will always be clinical situations where blood transfusions are required to be given overnight. For these transfusions to be of minimal risk to the patient and represent the Best Case scenario, they have to satisfy the following criteria:-

- A reason for giving the transfusion was documented in medical notes
- A good clinical reason for overnight transfusion was given, this defined as being active bleeding / haemolysis or low Hb with symptoms
- The patient's temperature, pulse or BP was monitored within 15 minutes of the start of transfusion and the result was documented in the patient's notes.
- An Hb result was available within 2 days before transfusion

30% (636/2138) of audit cases, from 154 hospitals, met all these criteria, while another 11% (226/2138) met 3 of the criteria but had missing data for the other.

Your site had **2 (11% of 19)** patients in the Best Case scenario.

Worst Case Scenario
Transfusions that occur overnight and put the patient at maximum risk represent the worst case scenario. All the following criteria had to be met:

- A reason for giving the transfusion was not documented in medical notes or this information was not known.
- No obvious clinical or pragmatic reason for overnight transfusion was given, including not known. Cases that were NOT regarded as worst case were those with active bleeding or haemolysis, with low Hb and symptoms, in theatre, raising Hb before surgery or procedure, for discharge the same or next day, limited line time for oncology & haematology cases and finishing a transfusion episode.
- The patient's temperature, pulse or BP was NOT monitored within 15 minutes of the start of transfusion and the result was NOT documented in the patient's notes.
- An Hb result was not available within 2 days before transfusion, or this information was not known
- The patient was not discharged either later the same day of the transfusion, or the next day, or this information was not known.

1% (22/2138) of cases from 17 hospitals met all these criteria. All the Worst Case scenarios involved some missing data, justified if taking the legal position of regarding something not documented as something not done.

Your site had **0** Worst Case scenarios out of 19 cases

Discussion

Only a small number of patients matched the worst case scenario, nonetheless 69% of transfusions put the patient at some risk as a result of transfusing overnight.

Having an acute clinical need and observations within 15 minutes are the most important of the criteria to be met to minimise the patient's risk of a transfusion. It is essential that hospitals work towards achieving these two criteria.

Section 2 - SUPPLEMENTARY FINDINGS

Transfusing to facilitate discharge
One of the reasons stated for transfusing a patient out of hours was to facilitate discharge next day. Nationally, 45 patients (2%) were transfused for this reason (Your site: 2) and 42 of these were discharged either on the same day as or the day after transfusion.

Pre-Transfusion haemoglobin values
Good practice suggests that a decision to transfuse is based on a recent Hb value.

Table 9 – Haemoglobin values obtained before transfusion

	National		Your site (19)	
	%	N	%	N
Hb date before transfusion known	94	2019	95	18
Same day	58	1168	56	10
Day before	34	693	39	7
2 days before	5	98	6	1
> 2 days before	3	60	0	0

92% of patients had an Hb result either the same day as the transfusion or the day before the transfusion. 8% of patients had an Hb result 2 or more days before the transfusion.

Table 10 - Patients transfused for low Hb with and without symptoms*

	With symptoms (797)		Without symptoms (280)		Total (1077)	
Hb values (g/dl)	%	N	%	N	%	N
<7	33	263	15	43	28	306
7 – 7.9	34	274	43	121	37	395
8 – 8.9	23	182	29	82	25	264
9 – 9.9	6	50	8	21	7	71
10 – 11.9	2	17	3	8	2	25
>12	-	0	1	2	0.2	2
Not stated	1	11	1	3	1	14

*Based on the documented reason for transfusion per se and not based on the reason given for transfusing overnight.

Comment

The audit did not collect enough clinical information on the patient to make any comments of whether the Hb result was “low” enough to indicate that the transfusion was appropriate. However, the majority of patients, 965/1077 (90%) did have an Hb value of 8.9 or under.

Table 11 - Location of patient

Location of patient	National (2138)		Your Site (19)	
	%	N	%	N
Ward	68	1456	68	13
HDU / ICU	14	308	26	5
Theatre	4	82	5	1
Recovery	1	25	0	0
Admission / assessment unit	8	176	0	0
A&E	4	88	0	0
Not stated	0.1	3	0	0

Table 12 - Distribution of transfusions per 2 hour time slot

Transfusion start time	National (2138)		Your Site (19)	
	%	N	%	N
20:00 – 21:59	33	695	32	6
22:00 – 23:59	24	510	26	5
Midnight – 01:59	15	330	16	3
02:00 – 03:59	10	211	5	1
04:00 – 05:59	7	139	5	1
06:00 – 07:59	8	179	16	3
Not stated	3	74	0	0

Overnight transfusions with the potential to be transfused earlier

The audit found that 47% (1014/2138) of the audit overnight transfusions had blood available between 08:00 and 17:59 indicating the potential for many of these transfusions to have occurred earlier.

Table 13 – Availability of blood for transfusion

Blood made available	National (2138)		Your Site (19)
	%	N	N
20:00 – 21:59	12	251	4
22:00 – 23:59	7	156	1
Midnight – 01:59	7	155	2
02:00 – 03:59	4	76	1
04:00 – 05:59	2	49	
06:00 – 07:59	1	32	
08:00-09:59	3	55	
10:00-11:59	5	96	
12:00-13:59	8	176	
14:00-15:59	15	315	
16:00-17:59	17	372	5
18:00-19:59	14	299	6
Not stated	5	106	

References

1. SHOT report (2005)
http://www.shotuk.org/SHOT%20reports%20&%20Summaries%202005.htm

2. (BCSH 1999) *Transfusion Medicine,* 1999, **9**, 227-238

CLINICAL EFFECTIVENESS & EVALUATION UNIT

Royal College of Physicians
Setting higher medical standards

National Comparative Audit of Blood Transfusion

NHS Blood and Transplant

Audit of overnight red blood cell transfusions

Patient Details – not for entry on to the web tool – for your use only when locating case notes

Unit Audit No. (Generated by website) ☐

Patient's Hospital ID number ☐

Audit Questions – for entry onto the web tool

Q1. On what date was this unit of blood made available by the transfusion laboratory for collection and transfusion? D D M M ☐☐☐☐

Q2. At what time was this unit of blood made available by the transfusion laboratory for collection and transfusion? H H : m m ☐☐☐☐

☐ Don't know

Q3. Where was the patient at the time of the transfusion?

Location options: (*Tick one appropriate option)*

Ward ☐ HDU/ICU ☐ Theatre ☐

Recovery ☐ A&E ☐ Assessment / admissions unit ☐

Transfusion of Unit Details

Q4. What was the date of the transfusion? *(Tick one option)*

24th September ☐ 25th September ☐ 26th September ☐

27th September ☐ 28th September ☐ 29th September ☐

30th September ☐ 1st October ☐ Date not known ☐

Q5. What time was the transfusion of this unit started?

H H : m m

☐☐☐☐

Don't know ☐

Q6. Why did this patient need this transfusion?

Active bleeding / Haemolysis ☐

Low Hb with symptoms ☐

Low Hb without symptoms ☐

Pre operative transfusion ☐

Other clinical reason ☐ Don't Know ☐

Q7. *Other, please state:*

Q8. Was this reason stated in the notes? Yes ☐ No ☐

Q9. How many units were in this transfusion episode? ☐

If there was more than one unit in this episode, state unit number (e.g. 1 of 2)

Q10. This was unit number *(Tick as appropriate)*

1 of 2 ☐ 2 of 2 ☐

1 of 3 ☐ 2 of 3 ☐ 3 of 3 ☐

1 of 4 ☐ 2 of 4 ☐ 3 of 4 ☐ 4 of 4 ☐

1 of 5 ☐ 2 of 5 ☐ 3 of 5 ☐ 4 of 5 ☐ 5 of 5 ☐

There were more than 5. ☐

Q11. How many more units in this transfusion episode **(defined as number of units consecutively transfused without a break of more than 24 hours)** started between 20:00 and 08:00 hours?

Enter the actual number in the box or 0 if there were no more units ☐

Q12. During the administration of the unit when was the first temperature recorded?

Within 15 minutes of transfusion start time ☐

After 15 minutes but before 30 minutes ☐

More than 30 minutes after start time ☐

Q13. During the administration of the unit when was the first BP recorded?

Within 15 minutes of transfusion start time ☐

After 15 minutes but before 30 minutes ☐

More than 30 minutes after start time ☐

Q14. During the administration of the unit when was the first pulse recorded?

Within 15 minutes of transfusion start time ☐

After 15 minutes but before 30 minutes ☐

More than 30 minutes after start time ☐

Q15. Why was this blood transfused overnight?

a) Active Bleeding / Haemolysis ☐

b) Low Hb with symptoms ☐

c) Haematology / oncology patient with limited line time ☐

d) Other clinical reason ☐

Please state[16]

e) For discharge next day ☐

f) Don't know ☐

Details of Hb results

Q17. What was the pre transfusion Hb result?
(*Take the Hb immediately preceding the transfusion start time. If you cannot find one, tick "Don't know")*

. G/dl	Don't know ☐

Q18. What was the date of this Hb result?

D	D	M	M

Q19. How long after this transfusion episode was the patient discharged?

Later that day	☐	Next day	☐
2-5 days	☐	> 5 days	☐
Not yet discharged	☐	Don't know	☐

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Hospital Name:

"Unit Audit No."	1	2	3	4	5	6	7	8	9	10, etc
Patient ID	A123456	S34y084	Etc.							
Day Collected	6th	12th	Etc.							
Time Collected										
07:31 – 09:30										
09:31 – 11:30										
11:31 – 13:30										
13:31 – 15:30										
15:31 – 17:30										
17:31 – 19:30										
19:31 – 21:30										
21:31 - 23:30										
23:31 – 01:30										
01:31 - 03:30										
03:31 – 05:30										
05:31 – 07:30										
Time unknown										
Speciality										
Medicine										
Surgery										
Orthopaedic										
A&E										
Maternity										
Haematology										
Paediatrics										
Oncology										
Elderly Care										
ICU										
Gynaecology										
Other: State										

Please complete one column for each unit of blood collected between 07:31 on Monday 24th September and 07:30 on Monday 1st October